JBSO, 2021 (6); 25-36
http://doi.org/10.32038/JBSO.2021.06.03

JOURNAL OF
BEHAVIOR STUDIES IN ORGANIZATIONS

Changes of the Employees' Stress Level during Three Waves of the COVID-19 Pandemic in Disadvantaged Hungarian Regions

Andrea Rucska, Emőke Kiss-Tóth, Csilla Lakatos*

University of Miskolc, Faculty of Health Sciences

Received: 7 September 2021 *Revised: 21 November 2021* *Accepted*: 11 December 2021

ABSTRACT

We have had to adopt to the situation caused by the COVID-19 pandemic in both private life and work. Besides uncertainty becoming general, our work and its environment have changed markedly in the last two years, also causing increased stress level. Our goal is to examine the changes of the employees' mental health, stress level and well-being in a disadvantaged Hungarian region during three waves of the pandemic, and the sectors where mental strain has primarily occurred. Materials and methods: Over the background variables, we used the Perceived Stress Scale (PSS-10), the WHO Well-being Index and the Hope Scale (AHS-H). The online questionnaire was recorded in November 2020, March 2021 and November 2021. In the study, we attached great importance to the stress level the employees working on different fields were exposed to in the pandemic situation. The quota online data recording is not representative, but it reflects the attitude of the region's population well. Results: The questionnaire was fulfilled by 515 persons in the second, 527 persons in the third and 590 persons in the fourth wave, with the average age of 36.5±13.4 years. 9 employee categories and 7 labour market statuses were defined; health care workers were examined separately. The employees' stress level reached its peak in the fourth wave (17.82; 17.63; 19.84). The highest values could be detected among employees with lower educational level (unskilled workers, householders, workmen). Examining the labour market status, public workers, temporary workers and pensioners showed higher stress values. Conclusion: The pandemic has significantly transformed our life. We must cope with increased stress and anxiety every day, and the relevance of the competencies has been revalued in this situation. The prolonged pandemic and the associated limitations have worn the employees' mental health that reached its peak in the fourth pandemic wave.

Keywords:
COVID-19 Pandemic, Labour Market Status, Stress, Well-Being

Correspondence:
rucska.andrea@uni-miskolc.hu

Introduction

The new coronavirus type (SARS-CoV-2) appeared in the Chinese city called Wuhan in the end of 2019 has reached Europe and Hungary in the spring of 2020, and it has raged in five waves until the spring of 2022. The pandemic has upset our whole previous lifestyle, and this has become a strong stress resource. Over the fear from the viral infection, our daily life management has completely changed, just as our methods for contacting, learning or work. The population suddenly had to develop several new habits and coping methods. Besides the unpleasantness of the loss of the common behavioural routines, numerous people have to face with serious existential difficulties as well. Although, life could be partly rearranged after the end of the first wave, the second wave of the pandemic started in the autumn of 2020, the onset of the third wave was in the spring of 2021, and its fourth wave started in the autumn of 2021. The morbidity and mortality data increased gradually by the different waves, and the health care system became maximized in this time. As a consequence of the long-lasting pandemic, economy has been rearranged, and, in several cases, the method and place of work have changed, "home office" activity has increased significantly, and the number of dismissals has also changed.

Our study targeted the examination of the residents' mental condition in one of the seven Hungarian statistical regions, the North-East Hungarian region. Our research goal was the exploration of how the mental health, stress level and well-being of different kinds of employees have changed during the second, third and fourth waves of the COVID-19 pandemic in the disadvantaged Hungarian region called Abaúj. Furthermore, in our research, we set the goal of the exploration of which sectors' employees were burdened mentally the most in the region during the pandemic.

Literature rewiew

The COVID-19 pandemic, that has been lasting for more than two years and affects all the fields of our lives, can be considered as such a new type of traumatic stressors that has happened unexpectedly and suddenly, affected people all over the world and caused the drastic transformation of our daily routine lifestyle (Fiorillo & Gorwood, 2020; Gorwood & Fiorillo, 2021). Because of the new situation, the whole humanity faced with a great health, economic, physical and mental health challenge. In this period, besides the examination of the physical effects of COVID-19, the effect of the pandemic on mental well-being has also become the focus of the scientific interest (Brooks et al., 2020; Osváth, 2021; Pfefferbaum & North, 2020; Sampogna, 2022).

The worldwide research has proved it in several cases that the pandemic has caused the aggravation of the symptoms of depression, perceived stress, anxiety and the use of psychoactive drugs (Lakatos & Rucska, 2022; Li et al., 2021; Rucska & Lakatos, 2021, Xiong et al., 2020). On the one hand, the fear from the viral infection itself, its somatic complications, stigmatization and death can be found in the background of this. On the other hand, social distance and isolation necessary due to the epidemiological measures also have an important role. Finally, inflation, uncertainty at work, unemployment, existential uncertainty and the controversial nature of information occurring in association with the economic measures and the world economy processes show coexistence with such negative mental symptoms as frustration and boredom, post-traumatic stress reactions, panic symptoms, anger and irritability, low self-esteem, solitude and the feeling of helplessness (Brooks et al., 2020). All these internal conditions typical for an existential crisis decrease the level of mental well-being significantly (Serafini et al., 2020).

Several studies have dealt with the direct and indirect effects of the COVID-19 pandemic on employees' mental status in the last two years (Meseguer de Pedro et al., 2021; Rodríguez-López et al., 2021). The latest literature review published by Mun and his colleagues (Mun et al., 2022) provides an overall picture about the studies available in this topic. The complexity of this topic is indicated by that the authors divide the main effects into five different groups. These are the following ones: job environments and work conditions (work setting), how employees think and feel about COVID-19

issues (perceptions of COVID-19), psychological reactions to COVID-19 (employee's well-being), specific strategies at the organizational level (organizational strategies), the influences on career behaviours during the pandemic (influences on career behaviours). In the following parts of this paper, the topics relevant from the point of view of this current study will be discussed, namely perceived stress related to COVID-19 and employees' mental health.

The definition of stress was introduced to the international scientific and public language by the Hungarian scientist researching in Canada, János SELYE (1907-1982). According to his definition, "*stress is a non-specific response of the body to any demand. (…) From the aspect of the stress-causing effect or stressor-activity, it does not matter whether the certain situation we are facing with is pleasant or not; only the level of the demand for readaptation matters."* (Selye, 1976, 25-26)

The transactional approach of stress is basically based on cognitive processes. According to the model of Lazarus and Folkman, the psychological condition of stress develops when a person meets a situation that is, based on his own judgement, exceeds his available resources (Lazarus & Folkman, 1984). According to the improved version of the model (Lazarus, 1993), we evaluate the personal significance of the situation during the primary evaluation processes, and we assess how it promotes or inhibits us in reaching our personal goals. It depends on the primary evaluation processes whether the situation is interpreted to be threatening, harmful or challenging. During the secondary evaluation processes, the situation undergoes a more thorough analysis based on who the situation can be attributed to, what are the options to fix the unexpected situation and maintain the expected one, and what are the future prospects. The experienced emotion and our acts in a certain situation are decided based on these evaluation processes. Besides the evaluation process, coping is an important component of the model, during which a person can strive for solving a problem by changing the situation or looking for further information, and he can use strategies that regulate emotions by changing emotions and thoughts. Finally, coping react to both the situation and the evaluation processes. So, several individual differences can be observed in this process, such as the sensibility for stimuli, but the earlier experience influencing the evaluation and genetic factors also have an important role (Ursin & Eriksen, 2004).

The fact whether stress will be the trigger of a somatic or mental illness greatly depends on the type, duration and severity of stress (Agid et al., 2000). Mild but long-lasting stress has an important role in the development of somatic and mental disorders, and these influence the individual's subjective health status (Stauder & Konkoly, 2006). Howvwer, a sequence of events alone cannot be pathogenic, but it becomes so because of the individual's reaction for stress, it is important to consider the individual differences in the perception of stress, the way how the affected person interprets a stress situation (Flesia et al., 2020). If the person thinks that he has only a little or no control over the certain event, and he is unable to judge when and what will happen, his body will react with a more intensive stress reaction that may manifest in increased fear, anxiety or even fear of death. These phenomena have been increasingly present since the outbreak of the pandemic (Maity et al., 2020; Liu et al., 2021; Savolainen et al., 2021). Proving the stress theory, the results so far also draw the attention to that the perception of COVID-19 situation and the cognitive, emotional and behavioural response based on this show correlation with the employees' performance (Liu et al., 2021). At the same time, it has also been proved that the psychological and social characteristics of the individuals, such as coping strategy and resilience mediate and moderate the effects of chronic stress caused by the pandemic on the individuals (Park et al., 2021; Eklund, 2021).

The examinations performed among employees suggest that the thoughts and emotions associated with the pandemic (such as uncertainty, threat, fear) influence productivity and the commitment to work in a negative way (Kang et al., 2021; Toscano & Zappalà, 2020). Isolation, perceived solitude, psychological distress and the difficulty in adapting to the new working conditions occur emphatically in the employees' anxiety related to the COVID-19 situation (Savolainen et al., 2021; Toscano & Zappalá, 2020), and they influence the employees' adaptation, their satisfaction with work and their

mental well-being (Islam et al., 2020). These negative effects may be moderated somewhat by emotional fulfilment and proactive behaviour (Trougakos et al., 2020), and by the awareness that the work done by the person is useful inside the certain organization and for the society (Liu et al., 2020). At the same time, creative and supportive, motivating solutions can also occur in workplace environment as a response for the traumatic event, which influence performance and the commitment to the organization in a positive way (De Clercq & Pereira, 2021).

Finally, the strengthening of the well-being of employees and employer organizations is targeted by the recommendations in which hope, resilience and social support occur as protective factors and in which sharing the employees' psychological capital with the colleagues and the importance of the supportive organizational atmosphere receive special attention (Mun et al., 2022).

However, there are several studies demonstrating the effect of COVID-19 on employees, there is a lack of studies comparing the stress reaction of workers working on different fields and analyses assessing the well-being of employees living and working in disadvantaged situation, so the exploration of these has been set as a goal of our current research.

Methods

Participants

The average age of the 528 persons participating *in the first phase of the research* (in the second wave of the pandemic) was 39.4±13.1 years. 44.7% of the respondents lived in cities, 28.8% in towns and 26.1% lived in villages. The respondents having higher educational level were overrepresented (59.3%). The majority of the respondents work regularly (61.9%), more of them are students (23%) and the rate of women raising infants is higher (6.8%). Pensioners represented themselves in 3.5%, while unemployed people occurred in 3.3%. 42% of the unemployed people had lost their jobs for more than a year at the time of answering, and only 15.8% of them became unemployed in the previous three months, during the period of the pandemic. Most participants of the research are health care professionals (30.6%), intellectuals (21.4%), or people doing any other kind of office work (19%), but we can also find physical workers (3.9%) and workmen (2.9%) as well. In this wave, 16.7% of the respondents have undergone the COVID-19 infection. Most of them (50.4%) had mild symptoms, and 47.8% had moderately strong symptoms. 22.7% of those living in one household had at least one infected family member, and 77.3% had more than one infected family members.

At the second data recording (in the third wave), the number of the respondents was 515, and their average age was 34.7±13.05 years (extent: 18-75 years).

49.6% of the respondents lived in cities, 24.6% in towns and 25.8% lived in villages. Most of the respondents had higher educational level here as well (53%). 62.1% of the respondents worked regularly, and 15.3% of them were students, 11.5% was on parental leave, 7.5% was pensioner and 2.7% was unemployed. In this period, 45.5% of the unemployed respondents had lost their jobs in over a year, and 27.3% of them became unemployed in the previous three months. Most of the respondents were intellectual (31.9%), health care professionals (23.7%) or had other kind of intellectual work (23.5%). Besides the students, workmen occurred in 3.2% and physical workers could be found in 2.4%. At the time of answering, the number of people having been infected by COVID-19 among the respondents had increased compared to the earlier results (23.5%) and the severity level of the symptoms had also changed. The rate of people experiencing mild symptoms decreased (45.1%), and the rate of moderately strong symptoms increased minimally (52.6%). The infection of those living in one household had also increased (37.1%) and 62.9% had more than one infected family members. At the time of answering, 45.8% of the sample had received at least one vaccine against the COVID-19 infection. Finally, only 5.5% of the respondents had asked for mental support from a professional in the recent period, most of them, 94.5% had not asked for this kind of help. At the same time, 38.2% of the

respondents answered that if they had the chance, they would ask for mental help (Lakatos & Rucska, 2022; Rucska & Lakatos, 2021).

590 persons participated *in the third data recording* (fourth wave), and their average age was 35.4±13.4 years. The youngest respondent was 18 years old, while the oldest participant was 85 years old. 48.1% of the respondents lived in cities, 29.1% in towns and 22.8% lived in villages. Most of the respondents had higher educational level (44.5%). 66.5% of the respondents work regularly, and 21.4% of them are students, 3.8% is on parental leave, 4.6% is pensioner and 0.5% is unemployed. In this period, 31.3% of the unemployed respondents had lost their jobs in over a year, and 18.8% of them became unemployed in three months. Most the respondents were intellectual (21.6%) and health care professionals (21.4%) or had other kind of intellectual work (20.5%). 0.9% of the respondents were workmen, and 2.8% who answered the questionnaire was physical worker. The rate of people having been over a COVID-19 infection had increased (32.5%); 40.7% of them suffered from mild, while 52.3% of them suffered from moderate symptoms. The rate of people showing mild symptoms seemed to decrease gradually.

Measures

Data recording of this current cross-sectional research was performed between the end of November 2020 and the end of December 2021, in the peaking phases of the epidemiological waves. Only age was marked as a criterion to participate in the online survey research: only respondents over the age of 18 could be involved in the study. Educational level, relationship status or settlement type were not defined as criteria in the research. Before filling the questionnaire, the participants received written information about the aim of the research. Although, our results are not representative, the sample gives an informative picture about the mental characteristics of people living in North-East Hungary during the second, third and fourth waves of the pandemic.

During data recording, we asked questions about labour market status, relationship status and the size of the residential settlement besides the socio-demographic data (such as gender, age, education). There was one question about the respondent's evaluation regarding his/her own health status and another about religiousness. There were further questions about the COVID-19 infection or its suspicion in terms of the person's own and immediate environment, the severity of the perceived symptoms and the form of the required health care.

The Perceived Stress Scale (PSS-10) measures the subjective perception of stress (Cohen, 1983). The questionnaire consists of 10 items which should be scored on a 5-point Likert-scale (0-4). At the certain items, the higher scores indicate the higher frequency of stress situations and more successful coping. The internal consistency of the Hungarian version of the questionnaire is quite good (Cronbach's alpha=0.85) (Stauder & Konkoly, 2006; Taylor, 2020).

The 5-item version of the WHO's General Well-being Scale intends to provide information about people's general well-being on a basis of the previous two-week period (Susánszky et al., 2006).

To measure the construction of hope, we used the Hungarian version of Hope Scale (Martos et al., 2014) (AHS-H) which had 12 items to measure general (global) hope on an 8-point Likert-scale (1-8). The internal consistency of the Hungarian version of the questionnaire is excellent (Cronbach's alpha=0.88) (Martos et al., 2014).

The Buss-Perry Aggression Questionnaire uses 29 items to map the trait aggression of four different fields of the personality, namely physical and verbal aggression, anger as the affective component of aggression and hostility as the cognitive component of aggression. The items could be assessed on a Likert scale from 1 to 5. Higher scores suggested higher aggression levels (Gerevich & Bácskai, 2012). We used SPSS 20.0 program for data analysis, and over descriptive statistical methods, we used correlation analysis, T-probe and chi-squared test.

Results

Perceived stress and demography

The global indicator of perceived stress has gone through a significant change in the examined sample during the pandemic periods, as the value of the stress index was 17.88±4.4 in the second wave, a minimal decrease could be detected in the third wave (17.67±4.6), but serious increase could be experienced in the fourth wave (19.84±2.6). No significant difference could be detected in case of genders ($p_{1;2;3} > 0.1$) in any of the waves, but men suffered from some more stress than women (Table 1).

Table 1. *The mean score of the changes of perceived stress in terms of genders*

Gender	Second wave (Mean)	Third wave (Mean)	Fourth wave (Mean)
male	18.6111	17.8571	19.8918
female	17.7698	17.6547	19.8182
total	17.8874	17.6761	19.8424

A significant difference could be experienced examining in terms of age in the second and third waves ($p_2 < 0.005$; $p_3 < 0.011$); the older the person was, the more the stress index increased. Stress index showed greater dispersion in the fourth wave, and there was not significant difference in the dispersion of age ($p_4 > 0.6$).

Although, there is no significant difference in terms of the residence ($p_{2,3,4} > 0.2$), but the size of the settlement shows a trend level correlation with the stress level of people living there in such a way that the stress index of people living in smaller settlements is lower than people's living in bigger settlements (Table 2). No essential changes could be experienced between the second and third waves, but the fourth wave essentially increased the stress index between the settlements.

Table 2. *The changes of perceived stress score in terms of residence*

residence	Second wave (Mean)	Third wave (Mean)	Fourth wave (Mean)
city	17.825	17.8312	19.8326
town	17.776	17.7763	19.8830
village	17.579	17.5797	19.5672

Stress index was found to be higher, however, not significantly ($p_{2,3,4} > 0.065$), in case of respondents who had undergone the infection or there had been a COVID-infected person in their families and in their wider environment.

If stress index is examined in terms of the labour market status (Table 3.), it can be stated that the unemployed population's stress index is not the highest, however, values increased by the fourth wave.

Table 3. *The changes of the mean value of perceived stress score in terms of labour market status*

labour market status	Second wave	Third wave	Fourth wave
working regularly	18.0095	17.6462	19.9434
temporary job	17.6000	20.7500	20.1667
unemployed	18.5882	18.0714	19.0000
public worker	20.0000	32.0000	21.5000
parental leave/full-time	17.2857	16.0833	18.8636
student	17.1695	17.4875	19.6400
pensioner	21.3333	20.2308	19.9259

Constant stress index increase could be detected among students and unemployed people. Greater fluctuation could be experienced among regular workers and parents on parental leave, because

decrease could be seen in the third wave, but greater change could be seen in the fourth wave. Among temporary workers, stress increased more after the second wave. In the second wave, people having been unemployed for a longer period were more stressed ($p<0.039$) than the others.

During the pandemic wave, the lowest stress index values were experienced among middle (M:17.9) and top managers (M:17.6). The highest value was detected among independent entrepreneurs (M:19.03), the reason of which could be the labour market restrictions and uncertainty. The mean stress index of subordinate workers was 18.5 during the different pandemic waves that is identical to the cumulative averages measured in the research.

Any connections with the COVID-19 infection (own infection, the infection of a family member, or infection experienced in the wider environment) were not in association with the changes of the stress index ($p>0.08$).

The natural reaction for stress is fear and anxiety. If we do not have a coping strategy, a communication or conflict managing set required to manage the situation, frustration can easily turn to aggression (Table 4).

Table 4. *The mean value of the total score of the aggression scale during the pandemic waves*

	Second wave	Third wave	Fourth wave
Mean of aggression score	63.6505	64.3068	63.9881
Std. Deviation	14.90065	16.20389	17.69890

The aggression of the region's adult population shows varying values that do not reach the threshold value[1,] but the deviation of the measured values shows constant increase. In the second wave, stress values showed weak negative correlation ($r=-0.307$) with the aggression values, so, lower stress occurred on higher aggression level. This occurred mainly in case of hostility ($r=-0.302$). In the third wave, the correlation between aggression and stress occurred more markedly ($r=-0.316$), but the connection between stress and hostility was more stronger ($r=-0.321$) than in the previous wave. These correlations between aggression and stress became significantly weaker in the fourth wave ($r=-0.206$), but the correlation of hostility still stood out from the aggression sub-scales ($r=-0.221$).

The presence of stress and its intensity intensively affected the health status ($p<0.04$) in the second wave of the pandemic, people with high stress index supposed bad subjective health status. This phenomenon could not be experienced in the third wave ($p>0.214$). Because of the long-lasting pandemic, there was also a correlation between stress and subjective health status in the fourth wave ($p<0.044$), so the more stressful population reported worse health status.

Well-being

The WHO's General Well-being Scale provides information about people's general well-being based on a two-week period in relation to the questionnaire filling. The highest the mean score is, the more typical the certain feature is (Table 5). Examining the different waves, relapse could be experienced in the third wave (WHO_2: 9.6; WHO_3: 9.4; WHO_4: 9.6).

Table 5. *Changes of the WHO General well-being score*

	Second wave (Mean)	Third wave (Mean)	Fourth wave (Mean)
well-being	9.65	9.41	9.64

On the scale, happiness and cheerfulness is typical for the respondents, they are active, calm and relaxed, but interesting activities have mostly missed from their lives. A significant difference can be detected in terms of age only in the awakening freshness subscale of the scale ($p_{2,3,4}< 0.00003$). The

values of women belonging to the older age group were higher in the second and third waves than the younger persons' values. This showed different tendency in the fourth wave as the level of well-being of the elder people was essentially lower ($p<0.0001$) than younger people.

Hope, religion and stress

At Hope Scale, we examine the sub-factors of Agency and Pathways separately (Table 6). The Agency sub-factor of the questionnaire explains the person's motivation strength directed to the goals, while the Pathways part indicates the person's ability that helps him to find the ways leading to the target (Mazza et al., 2020). All the sub-factors of Hope Scale showed gradually lower values during the pandemic waves.

Table 6. *The changes of the mean scores of the Hope scale components*

	Second wave (Mean)	Third wave (Mean)	Fourth wave (Mean)
agency	22.9165	21.6080	21.3203
pathways	23.5689	22.1420	21.8441
HOPE	46.4854	43.7500	43.1644

Goals are the leaders of the human personality and behaviour which help the person to understand his/her subjective experiences. Finding the possible solutions occurs more definitely in the sub-scale. However, the occurrence of the residence is not significant in the Hope Scale in any of the waves ($p_{2,3,4}>0.09$), but it occurs markedly in the pathways sub-scale in the third wave ($p_3>0.07$). Overall, hope is the lowest in towns in all the waves ($43.5_2;45_3;43.2_4$). It shows a decreasing value in the villages in the different waves ($47,2_2;42.2_3;44,2_4$), but this is extremely low in the third wave. It is the highest in cities, but values are continuously increasing among people living here ($42.7_2;45_3;47.2_4$).

However, no significant differences can be experienced in case of genders ($p>0.2$), but women are a little bit more optimistic than men, except the second wave.

Hope is a quite essential personality trait because it usually provides motivation in seemingly hopeless situations.

Discussion

The second wave of the COVID-19 pandemic hit the Hungarian population essentially more intensively than the first one. The number of infections increased exponentially with the mortality ratios. It is becoming harder and harder for the population to bear the restrictions aiming curbing the pandemic, which obviously increase the symptoms of depression, anxiety and perceived stress of the population above the age of 18 living in the disadvantaged region, and this is also supported by international research (Cao & Li, 2020; Xiong et al., 2020; Li et al., 2021).

In our online research, we used standard questionnaires besides the background variables. The scores of the perceived stress questionnaire did not exceed the critical 50%, but they were strongly close to it, and their dispersion was also high. Men's stress reaction was obviously higher than women's, but mostly men were affected by unemployment in this period, most of them lost their jobs during this pandemic period mostly because of their lower educational level than women. The increase of the stress level was significant in the fourth wave, and one reason of that may be the time factor, because the pandemic has raged for long time with high morbidity and mortality indexes. Age and residence did not influence stress index essentially, but it could be obviously seen that the older age group was more stressful what was understandable since they have suffered more because of the epidemic. In terms of the residence, it can be observed that more stress reactions could be detected in bigger settlements. Social distancing, isolation, the fear from the infection and existential uncertainty caused more

frustration in bigger settlements than in villages what is understandable, since people living in villages have bigger space for life than in cities.

The "well-being" of people related to the infection somehow was significantly worse than the others' that was independent from the fact that the respondent or one of his/her relatives had been infected. Examining all sub-scales, people having an intellectual job and living in towns feel themselves the best. The existing stress and the existing negative internal condition significantly decrease mental well-being (Lakatos & Rucska, 2022; Rucska & Lakatos, 2021; Serafini et al., 2020).

Hope is such a dynamic personality trait and internal energy that motivates the individual for coping with seemingly hopeless life situations. People living in cities are the most optimistic, and hopelessness is more marked in people living in villages that is one of the possible causes of the socio-economic condition related to disadvantaged situation.

Conclusion

The results of the examination aiming the assessment of the population's mental health performed in the north-east region of Hungary during the second wave of the pandemic coincide with those international and national studies which have proved the negative effects of COVID-19 on mental health. The correlation between the increase of the level of stress caused by the pandemic, the deterioration of well-being and the increase of the level of interpersonal aggression can be determined with high certainty among people living in the examined, socio-economically disadvantaged region. However, the level of perceived stress showed a reverse correlation with the feeling of hope and the fact of religious faith and belonging to a religious community, so with emotional coping. In the examined sample, the correlations between the mental phenomena have been proved mainly in the case of men, older people and people living in bigger settlements. Our results are indispensable for the success of prevention and intervention work, and they have practical importance for professionals working on health and social fields.

This current study was performed in the frames of the Thematic Excellence Program 2021 – National Research sub-program, as the part of the Creative Region III. project under the ID of TKP2021-NKTA-22, with the support of the National Research, Development and Innovation Office (Hungarian acronym: NKFIH).

References

Agid, O., Kohn, Y., & Lerer, B. (2000). Environmental stress and psychiatric illness. *Biomedicine & Pharmacotherapy*, *54*(3), 135-141. http://doi.org/10.1016/s0753-3322(00)89046-0

Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *The Lancet*, *395*(10227), 912-920. http://doi.org/10.1016/s0140-6736(20)30460-8

Cao, W., & Li, T. (2020). COVID-19: towards understanding of pathogenesis. *Cell Research. 30*(5), 367-369. http://doi.org/10.1038/s41422-020-0327-4

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A Global Measure of Perceived Stress. *Journal of Health and Social Behavior*, *24*(4), 385. http://doi.org/10.2307/2136404

De Clercq, D., & Pereira, R. (2021). Let's work together, especially in the pandemic: finding ways to encourage problem-focused voice behavior among passionate employees. *Journal of Organizational Effectiveness: People and Performance*. *9*(2), 169-192. https://doi.org/10.1108/JOEPP-05-2021-0121

Eklund, M. A. (2021). The COVID-19 lessons learned for business and governance. *SN Business & Economics, 1*(1), 25. http://doi.org/10.1007/s43546-020-00029-2

Fiorillo, A., & Gorwood, P. (2020). The consequences of the COVID-19 pandemic on mental health and implications for clinical practice. *Eur. Psychiatry, 63*, e32.

Flesia, L., Monaro, M., Mazza, C., Fietta, V., Colicino, E., Segatto, B., & Roma, P. (2020). Predicting Perceived Stress Related to the Covid-19 Outbreak through Stable Psychological Traits and Machine Learning Models. *Journal of Clinical Medicine*, *9*(10), 3350. http://doi.org/10.3390/jcm9103350

Gerevich, J., & Bácskai, E. (2012). *Korszerű addiktológiai mérőmódszerek*. Budapest, Semmelweis Kiadó.

Gorwood, P., & Fiorillo, A. (2021). One year after the COVID-19: What have we learnt, what shall we do next? *Eur. Psychiatry, 64*(1), e15.

Islam, S. M. D. U., Bodrud-Doza, M., Khan, R. M., Haque, M. A., & Mamun, M. A. (2020). Exploring COVID-19 stress and its factors in Bangladesh: a perception-based study. *Heliyon, 6*, e04399. http://doi.org/10.1016/j.heliyon.2020.e04399

Kang, S. E., Park, C., Lee, C. K., & Lee, S. (2021). The stress-induced impact of COVID-19 on tourism and hospitality workers. *Sustainability, 13*, 1327. http://doi.org/10.3390/su13031327

Lakatos, C. S., & Rucska, A. (2022). Észlelt stressz a COVID-19 világjárvány második és harmadik hullámában Észak-Magyarországon. In K. János Tibor (ed.), *Az ember és gazdagsága egészséges és biztonságos környezetben* (pp. 116-126). Komárno, Slovakia: International Research Institute.

Lazarus, R.S. (1993). From psychological stress to the emotions: a history of changing outlooks. *Annual Reviews. Psychol.* 44:1-21.

Lazarus, R. S., Folkman, S. (1984). *Stress, Appraisal, and Coping.* New York: Springer

Li, H., Hafeez, H. & Zaheer, M. A. (2021). COVID-19 and Pretentious Psychological Well-Being of Students: A Threat to Educational Sustainability. *Front Psychol*, *11*, 628003. http://doi.org/10.3389/fpsyg.2020.628003

Liu, D., Chen, Y., & Li, N. (2021). Tackling the negative impact of COVID-19 on work engagement and taking charge: a multi-study investigation of frontline health workers. *Journal of Applied Psychology, 106*, 185-198. http://doi.org/10.1037/apl0000866

Maity, S., Sen, N., & Sahu, T. N. (2020). COVID-19: Triggers fear psychosis among private sector employees, *Journal of Labor and Society*, *23*(4), 503-513. https://doi.org/10.1111/lands.12490

Martos, T., Lakatos, Cs., & Tóth-Vajna, R. (2014). A Remény Skála magyar változatának (AHS-H) pszichometriai jellemzői. *Mentálhigiéné és Pszichoszomatika, 15*(3), 187-202. http://doi.org/10.1556/Mental.15.2014.3.2

Mazza, M., Marano, G., Lai, C., Janiri, L., & Sani, G. (2020). Danger in danger: Interpersonal violence during COVID-19 quarantine. *Psychiatry Research*, *289*, 113046. http://doi.org/10.1016/j.psychres.2020.113046

Meseguer de Pedro, M., Fernández-Valera, M. M., García-Izquierdo, M., & Soler Sánchez, M. I. (2021). Burnout, psychological capital and health during COVID-19 social isolation: a longitudinal analysis. *Int. J. Environ. Res. Public Health, 18*, 1064. http://doi.org/10.3390/ijerph18031064

Mun, S., Moon, Y., Kim, H., & Kim, N. (2022). Current Discussions on Employees and Organizations During the COVID-19 Pandemic: A Systematic Literature Review. *Front. Psychol, 13*, 848778. http://doi.org/10.3389/fpsyg.2022.848778

Osváth, P. (2021). A COVID–19-pandémia mentálhigiénés következményei. Hogyan tudunk felkészülni a pszichodémiás krízisre? *Orvosi Hetilap, 162*(10), 366-374. https://doi.org/10.1556/650.2021.31141

Park, C. L., Finkelstein-Fox, L., Russell, B. S., Fendrich, M., Hutchison, M., & Becker, J. (2021). Psychological resilience early in the COVID-19 pandemic: Stressors, resources, and coping strategies in a national sample of Americans. *American Psychologist, 76*(5), 715-728. https://org.doi/10.1037/amp0000813

Pfefferbaum, B., & North, C. S. (2020). Mental Health and the Covid-19 Pandemic. *New England Journal of Medicine*, *383*(6), 510–512. http://doi.org/10.1056/nejmp2008017

Rodríguez-López, A. M., Rubio-Valdehita, S., & Díaz-Ramiro, E. M. (2021). Influence of the COVID-19 pandemic on mental workload and burnout of fashion retailing workers in Spain. *Int. J. Environ. Res. Public Health, 18*, 983. http://doi.org/10.3390/ijerph18030983

Rucska, A., & Lakatos, Cs. (2021). Changing of Health Anxiety in Disadvantaged Population During the Pandemic. In A. Singh, B. Barrett, G. Gui, E. Vieira, V. Chkoniya, A. Ecirli (eds.). *ICMS XXV Book of Proceedings* (pp. 24-36). 25th International Conference on Multidisciplinary Studies 17-18 September 2021 California Los Angeles (CA): European Center for Science Education and Research (EUSER).

Sampogna, G., Pompili, M., & Fiorillo, A. (2020). Mental Health in the Time of COVID-19 Pandemic: A Worldwide Perspective. *Int. J. Environ. Res. Public Health 2022, 19*, 161. http://doi.org/10.3390/ijerph19010161

Savolainen, I., Oksa, R., Savela, N., Celuch, M., & Oksanen, A. (2021). *COVID-19* Anxiety—A Longitudinal Survey Study of Psychological and Situational Risks among Finnish Workers. *International Journal of Environmental Research and Public Health, 18(2), 794.* http://doi.org/10.3390/ijerph18020794

Selye, J. (1976). *Stressz distressz nélkül*, Akadémia Kiadó, Budapest, 25-26.

Serafini, G., Parmigiani, B., Amerio, A., Aguglia, A., Sher, L., & Amore, M. (2020). The psychological impact of COVID-19 on the mental health in the general population. *QJM: An International Journal of Medicine*, *113*(8), 531-537. http://doi.org/10.1093/qjmed/hcaa201

Stauder, A., & Konkoly, T. B. (2006). Az Észlelt Stressz Kérdőív (PSS) Magyar Verziójának Jellemzői. *Mentálhigiéné és Pszichoszomatika, 7*(3), 203-216. http://doi.org/10.1556/Ment·l.7.2006.3.4

Susánszky, É., Konkoly, T. B., Stauder, A., & Kopp, M. (2006). A WHO Jól-Lét Kérdőív Rövidített (WBI-5) Magyar Változatának Validálása a Hungarostudy 2002 Országos Lakossági Egészségfelmérés alapján. *Mentálhigiéné és Pszichoszomatika, 7*(3), 247-255. http://doi.org/10.1556/mental.7.2006.3.8

Taylor, S., Landry, C. A., Paluszek, M. M., Fergus, T. A., McKay, D., & Asmundson, G. J. G. (2020). Development and initial validation of the COVID Stress Scales. *Journal of Anxiety Disorders, 72*, 102232. http://doi.org/10.1016/j.janxdis.2020.102232

Toscano, F., & Zappalà, S. (2020). Social isolation and stress as predictors of productivity perception and remote work satisfaction during the COVID-19 pandemic: the role of concern about the virus in a moderated double mediation. *Sustainability, 12*, 9804. http://doi.org/10.3390/su12239804

Trougakos, J. P., Chawla, N., & McCarthy, J. M. (2020). Working in a pandemic: exploring the impact of COVID-19 health anxiety on work, family, and health outcomes. *Journal of Applied Psychology, 105*, 1234-1245. http://doi.org/10.1037/apl0000739

Ursin, H., & Eriksen, H. R. (2004). The cognitive activation theory of stress. *Psychoneuroendocrinology*, *29*(5), 567-592. http://doi.org/10.1016/s0306-4530(03)00091-x

Xiong, J., Lipsitz, O., Nasri, F., Lui, L. M. W., Gill, H., Phan, L., Chen-Li, D., Iacobucci, M., Ho, R., Majeed, A., & McIntyre, R. S. (2020). Impact of COVID-19 Pandemic on Mental Health in the General Population: A Systematic Review. *Journal of Affective Disorders, 277*, 55-64. http://doi.org/10.1016/j.jad.2020.08.001

Acknowledgments
Not applicable.

Funding
Not applicable.

Ethics Declarations

Competing Interests
No, there are no conflicting interests.

Rights and Permissions

Open Access
This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. You may view a copy of Creative Commons Attribution 4.0 International License here: http://creativecommons.org/licenses/by/4.0/.